Repair-Works

By

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RepairWorks

A utility for recovering damaged
AWP and ADB files

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Occasionally, accidents happen—usually when we least expect them and are the least prepared. True to Murphy's Law, software and program data tend to crash or become damaged when we need them the most. RepairWorks is designed to repair those damaged Apple-Works word processing and data base files. Repair-Works will repair files that have damaged blocks and files that have corrupted data. RepairWorks cannot repair a file that does not appear in the catalog when you ask for a listing of the files or whose directory is damaged.

It is very important that you read the instructions before using RepairWorks. Failure to follow the instructions in this manual and on the disk could result in further damage to your data.

RepairWorks will repair most of the word processing and data base files for which AppleWorks gives the message "Getting errors trying to read" when trying to load an AppleWorks file to the desktop. RepairWorks cannot repair files with damaged directory information. If you have a disk with a damaged directory or the file structure is damaged, you should try to use a disk repair utility to repair the directory.

Organization of manual

The rest of this manual is divided into 8 chapters. Chapter 2 describes how to install RepairWorks on your system. Chapter 3 explains the Main Menu and how to get started repairing your files. In Chapter 4 you will see step by step instructions for repairing word processing files. Chapter 5 provides step by step instructions for repairing data base files. Chapter 6 describes the catalog and printer configuration options from the Main Menu. Chapter 7 includes some additional hints for those files that defy repair. And finally, Chapter 8 presents our theory of data loss that ranks right there beside the marshmallow and tapioca theories of the universe (someday, we'll expand the theory to fill several volumes).

Chapter 2
Installation

System Requirements. RepairWorks can be run from a 3.5 inch disk, hard disk, 5.25 inch floppy disk, or RAM disk. If you are using a 3.5 or 5.25 inch disk, the RepairWorks disk must remain in the disk drive at all times. Removing any disk during the repair of a file can create additional problems and render your file or disk useless. RepairWorks requires a minimum of 128K of memory and two disk drives. RepairWorks runs on the Apple enhanced IIe, IIc's, and the Apple IIGS.

RepairWorks is not copy protected. We encourage you to make a copy of the original disk, and then store the original disk in a safe place. Always run Repair-Works from a backup copy.

5.25 Inch Disk Users. RepairWorks is provided on both sides of a 5.25 inch disk. Place the startup disk in your disk drive and boot. When RepairWorks prompts you for the program disk, remove the disk, turn it over and insert the program side up in the disk drive. Press any key and RepairWorks will continue.

3.5 Inch Disk Users. All the necessary files for RepairWorks are contained in the volume directory of the 3.5 inch disk. If you have a limited number of drives, or a very large file, you can create a subdirectory on the RepairWorks 3.5 inch disk for your repaired file.

Hard-Disk Users. If you are running RepairWorks from a hard-disk, you must include all of the files from the 3.5 inch disk (or all of the files from both sides of the 5.25 inch disk) into the same directory on your hard disk (of course, you do not need ProDOS in the subdirectory). If you are using a program selector, you will need to run RPRWRKS.SYSTEM.

Two Disk Drive Users. If you have a two 5.25 or a single 3.5 in. disk drive system, you might want to copy all of the RepairWorks files to a RAM disk using a program such as RAMUP or a copy program. You will then have two floppy drives—one for your damaged file and one for the repaired file. Plus, RepairWorks will be able to load its different segments much faster.

Printer. A printer is helpful for the data base repair reports. You can enter a configuration string for your printer from the main menu. RepairWorks is shipped configured for an ImageWriter.

The first screen you see after the title screen when booting RepairWorks is the Main Menu (see Figure 1) which has four options. You can elect to repair a file, catalog a disk/path, configure a printer, or exit Repair-Works. The following is an explanation of each option.

```
┌─────────────────────────────┐
│                             │
│    MAIN MENU                │
│                             │
├─────────────────────────────┤
│                             │
│                             │
│                             │
│                             │
├─────────────────────────────┤
│                             │
│                             │
│    Repair a File            │
│                             │
│    Catalog a disk/path      │
│                             │
│    Printer configuration    │
│                             │
│    Exit                     │
│                             │
└─────────────────────────────┘
```
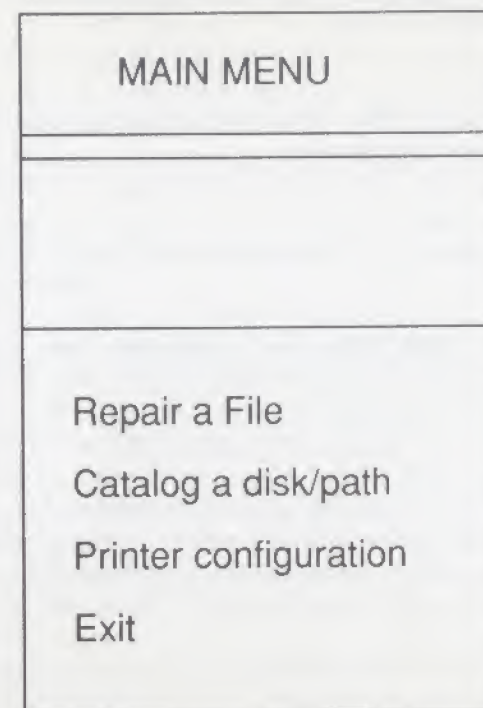
Figure 1 Main Menu

Repair a file

This option is probably the reason you purchased RepairWorks. You will need to highlight this option and press [RETURN] when you are ready to repair a file. You can highlight any of the options on the Main Menu by pressing the first letter of the line or by using the up and down arrow keys.

Catalog a disk/path

This option displays the AppleWorks and text (TXT) files on disk or in a subdirectory that you specify.

Printer configuration

RepairWorks is shipped configured for an ImageWriter printer. You can enter custom printer codes by selecting this option. For example, you may want to change the print from letter quality to draft or from 10 cpi to 12 cpi.

Exit

Selecting the final option will return you to the ProDOS operating system.

There are two ways to repair your word processing file. The first method is to repair it as a new Apple-Works word processing file (AWP) which you can load directly into AppleWorks. The second method is to repair the file as an ASCII text (TXT) which must be converted to a new AppleWorks file. Which should you use? You will probably want to first attempt to repair the file as an AWP file first. If AppleWorks still has problems reading the file, you can try to repair it as a text file. A badly damaged word processing file is usually best repaired as a text file.

This section will explain how to select the file and tell RepairWorks how to repair the file. Then, it will explain how to create a new word processing file from the text file RepairWorks created if you repaired the file as a text file.

Selecting and Repairing an AWP File

From the Main Menu select option 1, Repair a file. The next screen is the SELECT FILE menu (see Figure 2). RepairWorks will display the volume names of each of the drives connected to your system (maximum of 9). The lefthand column in the SELECT FILE menu is the Option number. Then, the Slot and Drive are displayed followed by the name of the Volume in the drive. The last option allows you to enter a different pathname.

The next step is to tell RepairWorks on which disk your damaged file is stored. You can enter the number of the drive, or you can select the last option which allows you to enter the ProDOS path. Pressing [ESC]

```
+-------------------------------+
|         Select Files          |
+-------------------------------+
|                               |
+-------------------------------+
|                               |
|                               |
|  Option  Drive  Volume        |
|  1       S7 D1  HARD           |
|  2       S6 D1  RepairWorks    |
|  3       S6 D2  LETTERS        |
|  4       ProDOS Path          |
|                               |
|                               |
+-------------------------------+
```

Figure 2 Select Files: Volume

will return you to the Main Menu from any input item.

You should choose the last option if you have a volume that is not displayed (maybe you have 10 drives). RepairWorks provides a line for entering the path to your file at the bottom of the screen.

The next screen (see Figure 3) displays a list of the AppleWorks files and subdirectories on the volume you selected. The display includes the filename, the file type, and the number of blocks the file uses on the disk. You can scroll through the list with the up and down arrow keys. If there are more than 8 files in the directory, the additional files will be displayed as you move the highlighted bar to the bottom of the list.

Use the arrow keys to move through the list and highlight the file you want to repair. When the file is highlighted, press [RETURN]. If you select a directory, the files in the directory will be displayed.

```
+-------------------------------+
|         Select Files          |
+-------------------------------+
|                               |
+-------------------------------+
|                               |
|                               |
|  File        Type    Blocks   |
|  PLANS       AWP      56       |
|  PLACES      ADB       3       |
|  CLIENTS     AWP       6       |
|  LIBRARY     ADB      12       |
|  MYFILES     DIR       2       |
|                               |
+-------------------------------+
```

Figure 3 Select Files: Files

The next screen is the Damage Control screen (see Figure 4). At the top of the screen, you will see some important information about your file. First is the filename you have selected for repair. Second is the type of AppleWorks file you are repairing (e.g. AWP). On the second line is the Key_Pointer. The Key_Pointer is a special block on the disk that tells ProDOS where your file is stored. Next, is the number of blocks used by your file. Last, is the storage type. A file that is a storage type 1 is 512 bytes or less. A storage type of 2 indicates a file that is between 2 and 256 blocks long. A file that has more than 256 blocks is a storage type 3.

```
                      ┌─────────────────────────────────────────┐
                      │                                         │
                      │                                      N  │
                      │                                      ║  │
                      │                                      ω  │
                      │                                      ρ  │
                      │              DAMAGE CONTROL          χ  │
                      │                                      t  │
                      │                                      о  │
                      │        P            ω                о  │
                      │        З            A                ρ  │
                      │        A            ║                τ  │
                      │        L            ω                S  │
                      │        P            α  6             │
                      │        ║            χ  5             │
                      │        ω            т  =             │
                      │        L            │  d             │
                      │        ║            ц  ω             │
                      │        ω            о  s             │
                      │        ║            о  k             │
                      │        4            с  о             │
                      │        F            │  │             │
                      │        0            χ  B             │
                      │        1            о                │
                      │        $            P                │
                      │        =            │                │
                      │        r            ω                │
                      │        ω            │                │
                      │        t            ║                │
                      │        n            ω                │
                      │        │            │                │
                      │        о            F                │
                      │        P                             │
                      │        │                             │
                      │        y                             │
                      │        ω                             │
                      │        X                             │
                      └─────────────────────────────────────────┘
```

Figure 4 Damage Control

Now, it's time to make a decision about how you want to repair your file. In the lower portion of the Damage Control screen, you will see two options. You can select to repair your word processing file as a new AppleWorks word processing file or as a text file. You will need to enter 1 for a word processing file or 2 for a text file.

┌───┐
│ 1. Create a new AppleWorks file   │
│ 2. Change your AppleWorks file to a text file   │
│   │
│ Enter your choice [1 or 2]   │
└───┘

Once you have selected the repair method, Repair-Works will ask you what filename you want to use for the repaired file:

┌───┐
│ Do you want to   │
│ 1. Use default name HOROSCOPE.RW   │
│ 2. Enter a new filename   │
└───┘

RepairWorks creates a default name by adding ".RW" to files repaired as word processing files, or adds ".TXT" to files repaired as text files. You can choose to use the default name, or you can select option 2 and enter a filename of your choice. If you select option 2, you will be given a line at the bottom of the screen to enter your new name.

After you have selected the filename for your repaired file, RepairWorks asks if you want to create the new file in the same ProDOS directory:

┌───┐
│ Do you want to create the new file in   │
│ the same ProDOS directory [Y/n]   │
└───┘

If you answer yes, RepairWorks will create the repaired file on the same disk or in the same subdirectory as your damaged file. If you answer no, Repair-Works will prompt you for a new pathname. You can enter the name of any existing volume or subdirectory.

```
DAMAGE CONTROL

File=PLANS         File type=AWP        Storagetype=2
Key_Pointer=$10F4  Blocks used=56

The file /HARD1/SPECIAL.Rw already exists
Do you want to delete it [y/n]
```

Figure 5 Damage Control: Delete a File

If the filename for your repaired file exists in the directory you have specified, you will be asked if you want to delete the old file (see Figure 5). If you answer yes, RepairWorks will delete the old file and create a new one. If you answer no, RepairWorks will take you back to the menu to specify a new filename and directory.

RepairWorks will now display the name of the repaired filename in the top part of the Damage Control screen and begin repairing your file. RepairWorks indicates which block it is repairing. As it searches through each block, it will display a series of dots across the screen. If you see a long line of asterisks, RepairWorks is searching for a new line of information in your file. A line of more than 4-5 asterisks indicates there is something in the file structure that AppleWorks does not recognize.

When RepairWorks finds bad information or missing data it will substitute *'s for the bad data, or substitute asterisks and the following message will be inserted into your file:

[=-=-=-=- Damage Control Report   Data Missing -=-=-=-=]

The asterisks and Damage Control Report let you know that data are missing from your file. You can then go through the file and add the information.

When RepairWorks finishes repairing your file, it will display a screen like Figure 6. Note that Repair-Works displays the full pathname of your new file. You will want to write this pathname down so that you can use it to load the repaired file to the AppleWorks desktop.

You can stop the repair process by pressing [ESC]. RepairWorks will then delete your file before reading the next block of data and return you to the Main Menu.

From TXT files to AWP files

If you repaired your word processing file as an ASCII text file, use the following steps to create a new word processing file.

```
 ┌─────────────────────────────────────────────────┐
 │              DAMAGE CONTROL                      │
 │                                                  │
 │  File=PLANS      File type=AwP    Storagetype=2  │
 │  Key_Pointer=$10F4   Blocks used=56              │
 │                                                  │
 │  Your file has been repaired                     │
 │  The new filename is /HARD1/PLANS.Rw             │
 │                                                  │
 │  Press <RETURN> to continue                      │
 └─────────────────────────────────────────────────┘
```

Figure 6 Damage Control: Repair Report

1.   Select "Add files to the Desktop" from the Apple-
     Works main menu.
2.   From the "Add files menu" select option 3, "Word
     Processor".
3.   From the "Word Processor" menu select option 2,
     "From a text (ASCII) file."
4.   Select the TXT file you have recovered just like
     adding a word processing file to the desktop.

Special Word Processing Repair Procedures

A repaired word processing file will have the same
formatting as your original file except in two in-
stances. First, if the first block of your file is damaged,
RepairWorks will create a new header (the line show-
ing the tabs) in the default AppleWorks format. You
will also lose any printer commands (top margin,
characters per inch, etc.) you had at the beginning of
the file. You will need to enter these printer commands
in your new file. Second, the section following any bad
data or bad blocks in the file may have a different or
altered format. For example, if you have an indent
command in a paragraph that was damaged, you will
also lose the indent command. You will need to care-
fully check your file for any Damage Control Reports
and asterisks.

Word processing files that are repaired as text files
will include all the print commands you entered in
your original file. These command are printed inside
brackets to make them easy to find. You may find
commands like:

[—Top Margin 1.2—]   [—Begin boldface—]

You will need to replace each of these commands with
the actual AppleWorks command. Also, RepairWorks
only includes those carriage returns that you entered
(or that were added as the result of damaged data).
Thus, your file will maintain its paragraph structure.

Chapter 5
Repairing Data Base Files

RepairWorks repairs a damaged data base file as an ASCII text file, which is then used to create a new data base. When RepairWorks completes the repair of the file, it then tries to recover the category names. RepairWorks will not recover any information concerning record layout, selection rules, or report formats. Thus, you will need to create new printer reports for your repaired data base file. Finally, RepairWorks gives you the option of printing a copy of the damage report. The information includes the name of the new file, the number of categories, the names of the categories (if recoverable), and instructions for creating a new data base file from an ASCII text file.

Let's see how to select a data base file to repair.

Selecting an ADB File

From the Main Menu select option 1, Repair a File. The next screen is the SELECT FILE menu (see Figure 2). RepairWorks will display the volume names of each of the drives connected to your system (maximum of 9). The lefthand column in the SELECT FILE menu is the Option number. Then, the Slot and Drive are displayed followed by the name of the Volume in the drive. The last option allows you to enter a different pathname.

The next step is to tell RepairWorks on which disk your damaged file is stored. You can enter the number of the drive, or you can select the last option which allows you to enter the ProDOS path. Pressing [ESC] will return you to the Main Menu from any input item.

You should choose the last option if you have a volume that is not displayed (maybe you have 10 drives). RepairWorks provides a line for entering the path to your file at the bottom of the screen.

The next screen (see Figure 3) displays a list of the AppleWorks files and subdirectories on the volume you selected. The display includes the filename, the file type, and the number of blocks the file uses on the disk. You can scroll through the list with the up and down arrow keys. If there are more than 8 files in the directory, the additional files will be displayed as you move the highlighted bar to the top or bottom of the list.

Use the arrow keys to move through the list and highlight the file you want to repair. When the file is highlighted, press [RETURN]. If you selected a directory, the contents of the directory will be displayed.

The next screen is the Damage Control screen (see Figure 4). At the top of the screen, you will see some important information about your file. First is the filename you have selected for repair. Second is the type of AppleWorks file you are repairing (e.g. AWP). On the second line is the Key_Pointer. The Key_Pointer is a special block on the disk that tells ProDOS where your file is stored. Next is the number of blocks used by your file. A file that is a storage type 1 is 512 bytes or less. A storage type of 2 indicates a file that is between 2 and 256 blocks long. A file that has more than 256 blocks is a storage type 3.

RepairWorks will now ask you what filename you want to use for the repaired file:

> Do you want to
> 1. Use default name PLACES.TXT
> 2. Enter a new filename

RepairWorks creates a default name by adding ".TXT" to the data base filename. You can choose to use the default name, or you can select option 2 and enter a filename of your choice. If you select option 2, you will be given a line at the bottom of the screen to enter your new name (see Figure 5).

After you have selected the filename for your repaired file, RepairWorks asks if you want to create the new file in the same ProDOS directory:

> Do you want to create the new file in the
> same ProDOS directory [Y/n]

If you answer yes, RepairWorks will create the repaired file on the same disk or in the same subdirectory as your damaged file. If you answer no, RepairWorks will prompt you for a new pathname. You can enter the name of any existing volume or subdirectory. RepairWorks will not create a new subdirectory or format a disk.

If the filename for your repaired file exists in the directory you have specified, you will be asked if you want to delete the old file (see Figure 5):

> The file /SPECIAL/LIBRARY already exists.
> Do you want to delete it? [Y/N]

If you answer yes, RepairWorks will delete the old file and create a new one. If you answer no, RepairWorks will take you back to the menu to specify a new filename or directory.

RepairWorks will now display the name of the repaired file in the top part of the Damage Control screen and begin repairing your file. RepairWorks first indicates which block it is repairing. As it searches through each block, it will display a series of dots across the screen. If you see a long line of asterisks, RepairWorks is searching for a new line of information in your file. A line of more than 4-5 asterisks indicates there is something in the file structure that Apple-Works does not recognize.

When RepairWorks finds bad information or missing data it will substitute *'s for the data or substitute asterisks and the following message into your file:

[=-=-=-=- Damage Control Report   Data Missing -=-=-=-=]

The asterisks and Damage Control Report let you know that data are missing from your file. You can then go back through the file and add the information from memory or from an old printed copy.

You can stop the repair process by pressing [ESC]. RepairWorks will then delete your file before reading the next block of data.

After repairing the file, RepairWorks displays the number of records repaired, the number of categories in each record, and the full pathname of the repaired file. You are also given the option of printing this information plus the category labels and instructions on how to create a new data base file from the text file.

If the first part of your data base file is damaged, RepairWorks assumes that you have 30 categories (the maximum possible) for each record. You will need to create a new data base with 30 categories even if your original file had only 5 categories. Once you have created the repaired data base, you can delete the extra categories.

Creating a new Data Base File

You can use the following steps to create your new data base file from the repaired data.

1. Select option 1, Add files to the desktop, from the main menu.

2. Select option 4 to create a new database.

3. Select option 2, From a text (ASCII) file. Highlight the recovered file and press <RETURN>.

4. When asked "Does the text (ASCII) file have:", select option 2.

5. When asked for "How many categories per record (1-30)", enter the number of categories reported by RepairWorks. (If the first part of your file was damaged, RepairWorks assumed there were 30 categories. You MUST use the same number of

categories as reported by RepairWorks).

6. When asked for the pathname of your file, enter the name of the new file used by RepairWorks.

7. You will need to give your repaired file a new name. We recommend using a different name than the original file.

8. You can add the category names by pressing Ó-N and following the directions for adding the category names.

You will need to inspect your new file for blank records and missing data. Blank records are usually the result of damaged data. You can use these blank records as clues for identifying missing records.

The Catalog command will provide you with a scrolling list of AppleWorks files and text files for the directory you specify similar to the screen in Figure 2. You can scroll through the list with the up and down arrow keys.

Printer Configuration

The Printer Configuration menu allows you to select either an ImageWriter printer or custom printer for RepairWorks reports. If you are using a parallel printer or serial printer that requires a special initialization string, you will want to configure your printer the first time you use RepairWorks. If you select option 2 from the menu, Custom Printer, you will be able to enter up to a 12 character printer initialization string. The string you enter will look like

CONTROL-I0N <ESC>E

When you have finished entering your string, enter a ^ (shift-6). You will then be asked if the string is correct. If it is, RepairWorks will save your string and return you to the Main Menu. If you tell RepairWorks that the entry is wrong, you will have a chance to reenter it.

There are some files that RepairWorks simply cannot repair. This section will describe some other techniques you can use for those problem files.

Word Processing Files

If you are unable to load your repaired word processing file, you have two options. First, you should try to repair the file as a text file and then create a new AWP file. Second, you can attempt to repair your "repaired" AWP file. A second time through Repair-Works may correct the problem(s).

Data Base Files

Some repaired data base files might include misaligned categories. That is, the first 10 records are okay, but in the remaining records, the first category is moved down one to the second category—everything is off by one. To solve this problem, first make a note of the information in the record that is off. Then, create a new word processing file from the repaired data base text file. Use the Ö-F command to find the misaligned record. If you zoom (Ö-Z) in, you will see the carriage returns inserted to make up blank categories. (Remember, each data base record in the text file must have the same number of lines.) You can then delete the appropriate number of carriage returns to realign your categories. Finally, PRINT the file to an ASCII text file using the same filename you used to create the word processor file. You should now be able to create the new data base file with all the categories lining up correctly.

Repaired Files with only 1 Block

A repaired file that is only one block long probably results because 1) RepairWorks was unable to find a starting point in the file, 2) the Key_Pointer was damaged, or 3) the directory information was damaged. You should delete the file.

Damaged Directories

Repairing files on a disk with a damaged directory is beyond the scope of RepairWorks. There are individuals and software which may aid you in the process of reconstructing your damaged directory. This process, however, is not for the faint hearted. We recommend that you purchase copies of ProSEL and Bag of Tricks II. ProSEL is a very good collection of utilities for file management. One ProSEL program, Mr. Fixit, repairs damaged directories. Similarly, Bag of Tricks II has several utilities for reconstructing damaged directories. The National AppleWorks User's Group (NAUG) also maintains a list of individuals who specialize in repairing data from damaged files.

Chapter 8
A Theory of Data

When AppleWorks is unable to load a file, what is the cause? Although we cannot explain what happens, we can describe three major types of problems that can occur with AppleWorks files. Before we describe these problems, let's look at how ProDOS stores data on the disk. Each ProDOS disk is arranged in blocks which hold 512 bytes (or 512 characters). Thus, your word processing, data base, or spread sheet file will be stored in one or more blocks on the disk. AppleWorks tells ProDOS how much data to save and load for a file, but ProDOS does the actual disk access and assigns the blocks for your file. Now, let's see what can go wrong with your data.

AppleWorks has a very sophisticated format for storing data and will balk, or worse crash, when the file being loaded does not match the format AppleWorks expects. The first explanation for why a file does not load is that the format of the data in the file has been accidentally changed and AppleWorks can no longer determine how to read the data. We are guessing that electrical power fluctuations while you are saving a file is the primary culprit. Other causes could be faulty memory chips or a faulty disk drive. Fortunately, RepairWorks can repair most of the data in these files.

The second explanation for troublesome Appleworks files is bad blocks on a disk. Occasionally, a block on a disk becomes unreadable and the data in the block is lost. AppleWorks is unable to load a file that has a bad block. Again, RepairWorks can repair most of the data in files with a bad block. You will, of course, lose the data in the bad block, but you will have

access to all the other data in the file.

The third explanation for bad files is a ProDOS problem. As we mentioned earlier, ProDOS stores your data in blocks on the disk. ProDOS also keeps a record, index block, of where these blocks are located. ProDOS also keeps a directory (or several directories) of the files on a disk. Occasionally, the information about the index block, information in the index block, or the directory itself is damaged. When this type of ProDOS problem occurs, RepairWorks is unable to access the file, let alone repair it. Some of the earlier versions of ProDOS would damage the volume directory when the disk became full. As a result, you lost access to your files.

Although we are not sure what causes the problems with some of your AppleWorks files, we do have an understanding of how to repair much of the data. If your directory is okay, there is a good chance that RepairWorks can repair your data.

RepairWorks

In a perfect world a program like RepairWorks wouldn't be necessary. Unfortunately, the world isn't perfect and for those of use who have peered tearfully into a monitor filled with the dying gasps of our precious work it can seem almost evil.

Don't despair! RepairWorks can soften the blow of cruel fate when it involves your AppleWorks files. RepairWorks will examine your files and surgically remove the offending problems, thus greatly reducing or eliminating the task of recreating your work. RepairWorks is available on both 5.25 in. and 3.5 in. disks and can be ordered with special next day delivery.

RepairWorks recovers damaged AWP and ADB files that have bad blocks or corrupted data. RepairWorks does not work with disks with damaged directories.

System Requirements
    Enhanced Apple IIe, IIc, IIGS
    128K RAM
    Two disk drives
    Printer suggested

Q Labs
313-331-0941
313-774-7740 Technical Support
10:00 am - 5:30 pm Eastern M-F